

Reflection and Refraction

next class - hand back quizzes + do lab

<http://physics-pages.wikispaces.com/file/view/LAB%2BMANUAL%2BPhysics%2B11.pdf/604456999/LAB%2BMANUAL%2BPhysics%2B11.pdf>

p45 and 46 (looks like two labs but write it like one lab with two parts, part 1 air to water part 2 water to air)

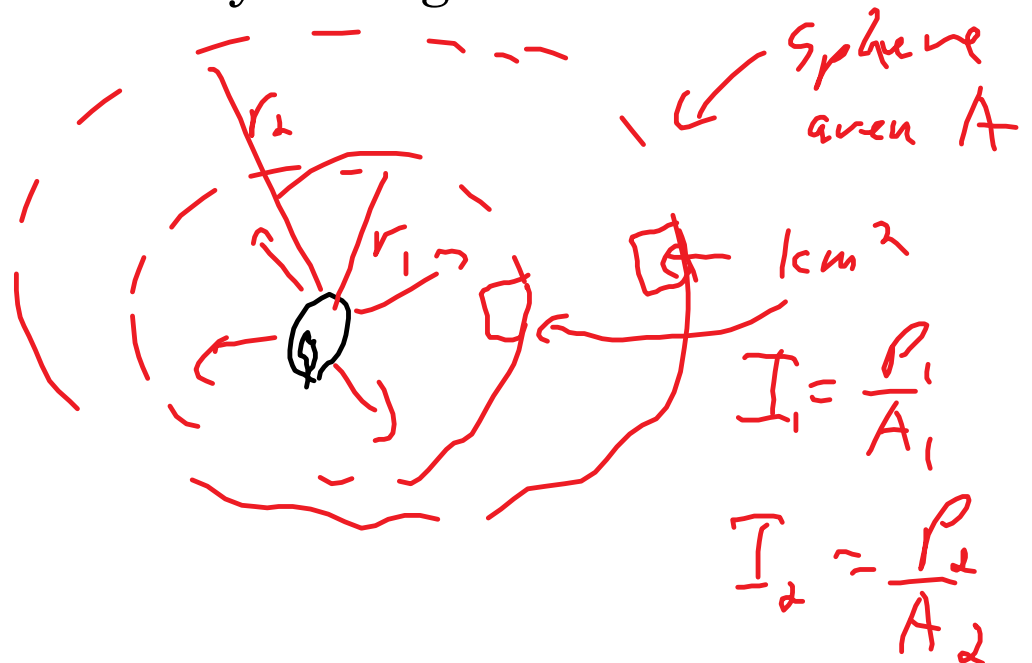
Come to class with your lab writeup prepped with a purpose, leave a space for hypothesis, procedure (just write "refer to lab manual p45 and 46), and data tables, properly labelled.

Activity 30 minutes- Draw and describe:

1. laser hitting mirror at various angles
2. laser hitting plastic block at various angles
3. binocular crystal - draw and look through hole. Look at finger and move up/down.
4. hanging crystal in window
5. p344 problems 1-7, 9, 14 use $I \propto x^{-2}$
6. prep for lab
7. watch videos: <http://physics-pages.wikispaces.com/Light>

Intensity - $I = P/A$ $I \propto A^{-2}$

if you have a light source spreading light out in all directions, how does the intensity change as you get further away? - it gets dimmer
math?



$$P_2 = I_2 \times A_2 = I 4\pi r^2$$

$$I = \frac{P}{4\pi r^2}$$

$$I \propto \frac{1}{r^2}$$

eg. A 100W light bulb emits
100 J of light energy, (and heat)

Per second - in a sphere.
 What is the intensity of the light
 a) 1.0m away?
 b) 3.0m away?
 c) ratio of b to a?

a) $I = P/A = 100W/4\pi(1.0m)^2$

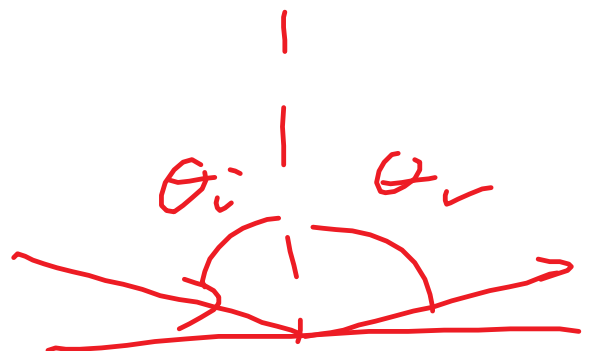
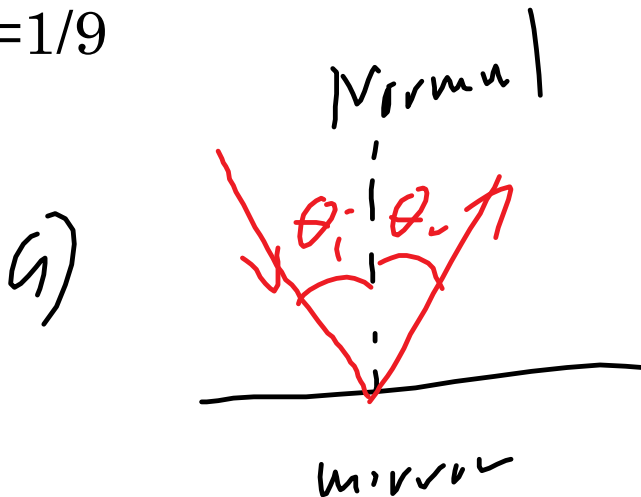
$I = 100/(4 \times \pi) = 7.957747154594766$
 8.0 W/m^2

b) $I = P/A = 100W/4\pi(3.0m)^2$

$100/(4 \times 9 \times \pi) = 0.884194128288307$
 0.88 W/m^2

a) $1/9$ $I \propto x^{-2}$ $I_2/I_1 = x_2^{-2}/x_1^{-2} = (3)^{-2}/(1)^1$

$= 1/9$



Law of reflection $\theta_i = \theta_r$
 θ_i incident angle

θ_r reflected angle